

Irrigation Training and Research Center



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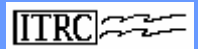
Comments on
Water-Energy Relationship

Staff Paper - June 2005

by

Irrigation Training and Research Center
(ITRC)

Cal Poly (San Luis Obispo)



The focus of our comments Energy used in water for agriculture

ITRC will introduce additional materials and analysis to the Integrated Energy Policy Report (IEPR) process of the Energy Commission

ITRC is pleased to have contributed to the WER effort with extensive data and analysis conducted by ITRC for the PIER Agricultural Program

Clarifications to WER Report

- 1. Regarding total electricity used for water in agriculture.**

The WER report, Pg. 28 “acknowledges that its estimate for agricultural-related irrigation electricity use is likely too-low”

ITRC recommends that a comprehensive effort be conducted to develop a rigorous data collection and analysis process to generate a new more accurate agricultural water energy use baseline.

		Components of the total electrical energy consumption for agricultural water					
No.	Name	Irrigation District Groundwater Pumping	Irrigation District Surface Water Pumping	On-Farm Groundwater Pumping	On-Farm Surface Water Pumping	Conveyance to Irrigation District	Overall Ag-Water Electrical Energy Consumption Estimates (see notes column)
1	CEC - April 8, 2005 Workshop						2,260*
2	CEC Ag-Water Energy Forecasts			2,914*	2,505*		
3	CEC NAICS Code Based Data					1,800*	2,514**
4	UC Publ. 3215 - Original 1977 Results		892	3,051	1,154	1,987	7,085
5	UC Publ. 3215 - Modified by ITRC to represent 2003 conditions	246	892	4,812	2,300	1,987	10,237
6	ITRC Energy Analysis	246	821	4,499	2,873	1,719	10,160

Clarifications to WER Report

- 2. Regarding Page 3. “data...is quickly outdated because of the rapid changes in planting patterns in response to crop price dynamics”**

ITRC has identified other major factors that can influence potential increase in electricity used for groundwater pumping. Please add to the WER report:

- Shift to drip/micro irrigation systems at farms required to use groundwater to achieve flexible delivery schedules
- San Joaquin River court case to restore salmon runs
- Larger than expected shift from diesel to electricity

Clarifications to WER Report

3. Regarding Page 56 WER report– “pump efficiency improvements do not reduce energy consumption”

This generalization only applies to on-farm well Pumps. It does not apply to irrigation district and on-farm booster pumps. It also does not apply to farms using “scientific” water management practices.

Additions to WER Report

1. Please add information on the Energy Commission Agricultural Peak Load Reduction Program (SB 5X)

ITRC administered the irrigation districts peak reduction program achieving over 43 MW in peak load reductions.

ITRC identified high potential for irrigation districts to shift peak load and participate in demand response programs

ITRC developed pump testing procedure standards and required pump test companies to adopt as requisite to participate with incentives.

Additions to WER Report

2. Please Add Recommendations Addressing Irrigation-related Electricity Consumption From The PIER Agricultural Program's Technology Roadmap

1. Place more emphasis to improve irrigation district infrastructure
2. New pump designs
3. Ways to reduce pumping pressures on drip/micro technologies
4. New sprinkler options which conserve water and power
5. New durable pump impeller materials

Recommendations of Potential Measures to Achieve Energy Water Efficiency

1. Electricity Peak Load Reduction Options:

- Achieve peak load reductions in large pumping system accounts by encouraging irrigation districts and large farming companies to participate in demand response programs
- Achieve peak load reductions by encouraging large number of accounts to adopt time of use rates

Recommendations of Potential Measures to Achieve Energy Water Efficiency

2. Energy Conservation and Efficiency Options:

- Encourage irrigation districts to adopt flexible water delivery systems
- Encourage farmers who utilize micro-irrigation systems to purchase flexible district water deliveries and reduce on-farm pumping
- Encourage regional coordination efforts to adopt sustainable groundwater-energy management practices

Thank you.

ITRC is proud of work done with CEC thanks to over 16 years of partnership to advance energy efficiency in agriculture

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